The University of Texas at Tyler
Department of Electrical Engineering

EENG 5340: Advanced Microprocessors

Syllabus

Catalog Description:

Microprocessor architecture, processor core, instruction set, operating modes, addressing modes, programming in assembly language and higher level languages, interrupts, general purpose digital interfacing, analog interfacing, timers, peripherals and communication, memory interfacing.

Prerequisites: EENG 3302 - Digital Systems and EENG 3307 - Microprocessors

Credits: (3 hours lecture, 0 hours laboratory per week)

Text(s): Joseph Yiu, The Definitive Guide to ARM® Cortex®-M3 and Cortex®-M4 Processors, Third Edition, Newnes Publishing, 2013.
ISBN-13: 978-0124080829, ISBN-10: 0124080820

Additional Material: STM Discovery kit with STM32F407VG ARM Cortex-M4 MCU

Course Coordinator: Mukul V. Shirvaikar, Professor, Electrical Engineering

Topics Covered: (paragraph of topics separated by semicolons)

Microprocessor architecture, processor core, instruction set, operating modes, addressing modes, programming in assembly language and higher level languages, interrupts, general purpose digital interfacing, analog interfacing, timers, peripherals and communication, memory interfacing.

Evaluation Methods: (only items in dark print apply):

1. Examinations / Quizzes
2. Homework
3. Report
4. Computer Programming
5. Project
6. Presentation
7. Course Participation
8. Peer Review

Course Learning Outcomes[1]: By the end of this course students will be able to:

1. Describe the architecture of an advanced microprocessor. [1]
2. Use modern program development and debugging tools. [5]
3. Utilize binary to implement timers and memory system design computation. [1]
4. Explain communication schemes for peripheral interfacing required for advanced microprocessor system design. [1]
5. Write subroutines in assembly and higher level language and compare solutions. [4]
6. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner. [3]
7. Incorporate information gained by independent learning from technical reference manuals and other sources to implement a project and enhance reports. [3, 4]

[1]*Numbers in brackets refer to method(s) used to evaluate the course objective.*

Relationship to Student Outcomes (only items in dark print apply)[2]: This course supports the following Electrical Engineering Student Outcomes, which state that our students will:

1. Breadth and Depth: Students will be able to apply knowledge at a graduate level in two of the following areas: electronics, power systems, controls, advanced engineering mathematics, signal processing. [1]
2. Modern Engineering Tools: Students will be able to use modern engineering tools for analysis and design as applied to engineering problems. [2]
3. Advanced Engineering Mathematics: Students will be able to apply principles of advanced engineering mathematics including probability and statistics to engineering problems. [3]
4. Systems Design: Students will be able to apply systems design approaches including modeling and simulation of interacting sub-systems to complex engineering problems. [4]
5. Design Methods: Students will be able to demonstrate application of design methodology by comparing and evaluating solutions to engineering problems. [5]
6. Communication Skills: Students will demonstrate effective oral, visual and written communication skills from a technical perspective. [6, 7]

[2]Numbers in brackets refer to course objective(s) that address the Student Outcome.

Contribution to Meeting Professional Component: (in semester hours)

Mathematics and Basic Sciences:		hours
Engineering Sciences and Design:	3	hours
General Education Component:		hours

Prepared By:	Mukul V. Shirvaikar	Date:	17 August 2015
Updated By:		Date:	